

IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1. (Currently Amended) A modulation apparatus comprising:

a first frequency-increasing single side band (SSB) modulator that performs SSB modulation on a first input symbol to obtain an upper side band (USB) signal;

a second frequency-increasing SSB modulator that performs the SSB modulation on a second input symbol to obtain a lower side band (LSB) signal; and

a combiner that combines the USB signal and the LSB signal,

wherein the second frequency-increasing SSB modulator performs SSB modulation to obtain the LSB signal using a carrier frequency, the carrier frequency being higher than a carrier frequency used in the first frequency-increasing SSB modulator by a the fundamental frequency of the first input symbol and the second input symbol, such that the LSB signal and the USB signal are multiplexed in the same frequency band.

2. (Withdrawn) A demodulation apparatus comprising:

a first frequency-decreasing demodulator that demodulates an input modulation signal by a cosine curve with a predetermined carrier frequency to obtain a first demodulation signal; and

a second frequency-decreasing demodulator that demodulates an input modulation signal by a sine curve with a carrier frequency higher than the carrier frequency used in the first frequency-decreasing demodulator by the fundamental frequency of a symbol.

3. (Withdrawn) A demodulation apparatus comprising:

a detector that performs quadrature detection on an input modulation signal by a predetermined carrier frequency to obtain a first detection signal and a second detection signal;

an analog/digital converter that quantizes the first detection signal and the second detection signal with an over-sampling frequency four times or more an entire bandwidth of the detection signal;

a FFT circuit that performs Fourier transform on the first detection signal and the second detection signal quantized; and

a signal detector that detects a signal before being modulated based on an output signal of the FFT circuit, using a signal in each carrier frequency and another signal in an adjacent frequency on a USB or LSB side.

4. (Currently Amended) A modulation method comprising:

an upper side band (USB) signal forming step of performing single side band (SSB) modulation on a first input symbol to obtain a USB signal;

a lower side band (LSB) signal forming step of performing the SSB modulation on a second input symbol to obtain an LSB signal; and

a combining step of combining the USB signal and the LSB signal,

wherein, in the LSB signal forming step, the SSB modulation is performed using a carrier frequency, the carrier frequency being higher than a carrier frequency used in the USB signal forming step by a the fundamental frequency of the first input symbol and the second input

symbol, such that the LSB signal and the USB signal are multiplexed in the same frequency band.

5. (Withdrawn) A demodulation method comprising:

a first demodulation step of demodulating a modulation signal by a cosine curve with a predetermined carrier frequency to obtain a first demodulation signal; and

a second demodulation step of demodulating a modulation signal by a sine curve with a carrier frequency higher than the carrier frequency used in the first demodulation step by the fundamental frequency of an symbol.

6. (Currently Amended) A demodulation apparatus for demodulating a signal combined by the combiner in the modulation apparatus according to claim 1, the demodulation apparatus comprising:

a first frequency-decreasing demodulator that demodulates an input modulation signal by a cosine curve with a first ~~predetermined~~ carrier frequency to obtain a first demodulation signal; and

a second frequency-decreasing demodulator that demodulates the an input modulation signal by a sine curve with a second carrier frequency to obtain a second demodulation signal, wherein

the second carrier frequency is higher than the carrier frequency used in the first carrier frequency frequency-decreasing demodulator by the fundamental frequency of the first input [[a]] symbol and the second input symbol.

Claim 7 (Cancelled).

8. (Currently Amended) A demodulation method of demodulating a signal combined in the combining step of the modulation method according to claim 4, the method comprising:

a first demodulation step of demodulating a modulation signal by a cosine curve with a first predetermined carrier frequency to obtain a first demodulation signal; and

a second demodulation step of demodulating the ~~[[a]]~~ modulation signal by a sine curve with a second carrier frequency to obtain a second demodulation signal, wherein

the second carrier frequency is higher than the carrier frequency used in the first carrier frequency demodulation step by the fundamental frequency of the first input ~~[[a]]~~ symbol and the second input symbol.